Determinants of Commercial Banks' Financial Stability: Evidence from MENA Countries

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Abstract:

This current study aims to estimate the factors that contribute to improving the financial stability of commercial banks that operate in MENA-States using a balanced panel dataset for a period of 10 years (2011 to 2020). A sample consists of 132 commercial banks. In general, the empirical analysis findings show that all the explanatory variables represented in financial indicators related to determinants can reliably achieve the banking industry's financial stability in the countries being studied. They are important indicators for predicting commercial banks' fiscal stability. Specifically, the empirical evidence indicates that the level of banking competition, banking efficiency, financial inclusion and the level of performance of commercial banks are positively correlated with the level of stability. The findings also show that the financial development measured by stock market capitalization is negatively impacting the level of banking stability.

Keywords: Competition; Efficiency; Financial Inclusion; Financial Stability**.**

Jel Classification Codes: G32, G21, C51.

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1. Introduction

Commercial banks are the foundation of any country's financial system and play an important as financial intermediaries' role between those who have an excess of money and those who are in need of money effectively and efficiently. In this regard, commercial banks are considered the most dynamic financial intermediaries accepting deposits (savings) and transferring them in the form of investments (granting credit) and play a central role in mobilizing and distributing financial resources, financing economic activities, overall economic relations, and working on the stability and prosperity of countries, in light of a competitive strategy that regulates the extent of their continuation, success, and development.

In developing countries such as the MENA countries, The commercial banks in the banking industry play a foundation and important role in the allocation and transfer of fiscal resources between different economic components (Topak & Talu, 2017).

Therefore, Commercial banks seek to create demand for several types of these resources and enhance the rates of work with them, also providing prerequisites for intensification of banking products, run of overall economic relations, and enhance its capacity to attract several savings and expand its role mediation in order to increase its level of profits.

Thus, economies of states that have a productive, sound, versatile, and efficiently banking sectors is high able to accomplish to economic development, growth, stability, and safety of their financial system. On the contrary, instability of banking sectors (insolvencies) further exacerbates the weakness of macroeconomics, leading to a systemic crisis (Ebenezer, Omar, & Kamil, 2017).

Accordingly, the safety and success of commercial banks are crucial for the financial system and economic development in general. Therefore, the importance of this study stems from the importance of stability in the banking institutions and the safety of the fiscal system, which are the backbone of any economy. To maintain stability in the banking institutions, it is crucial to recognize the factors that have an effect on behavior of banking activities and increase awareness of their potential effects, as commercial banks are exposed to many different types of contingent factors that affect them.

Therefore, our main research motivation is to broaden and deepen our awareness of the probable factors that determine the stability of commercial banks operating in MENA nations.

The study's structure can be explained in the following way: Section 2 surveys the empirical literature regarding the connection between bank stability and independent variables. The data and methodology of the study are explained in Section 3. In Section 4, empirical findings and discussion are offered. Section 5 completes the study.

2. Literature Review

The dramatic and universal acceleration and growth of investment in financial institutions has attracted a lot of attention of several researchers, analysts, actors in the financial institutions, and academics in recent times. This is all because of its importance to countries' sustainable economic development.

In particular, following the financial crisis of 2007/2008, that caused to the insolvencies of several large commercial banks, Furthermore, a strong, resilient, and A stable financial system and its components are now a strategic priority and necessary direction for financial and monetary policy for overall economic development.

Therefore, Considerable attention has been given many researchers in empirical studies to examining the association between banks financial stability rates and other variables from different perspectives.

With regard to the empirical evidence of the diverse linkages that are found between the stability of banks and the competition in banking in the literature, broadly speaking, there is very much empirical research that examined into the impact of competition in banking on their stability, Experimental researches have thus resulted contradictory conclusions.

This disparity can be observed, for instance, Empirical evidence by Kasman & Kasman (2015), Schaeck & Cihák (2014), Noman et.al. (2018), Ahi & Laidroo (2019), Antony et.al. (2021), Mamadou Asngar et.al. (2022), demonstrate that there is a strong and positive association between the level of competition and the financial stability of banks, "this finding is mainly attributed to the level of competition in the banking industry, which plays an important role in ensuring banks' financial stability" which supports the hypothesis of "competition stability"'.

Contrary to this, a negative relationship exists between competition among banks and their stability was found by González, Razia, Búa, & Sestayo (2019), De-Ramon, Francis, & Straughan (2019), Phan, Anwar et.al. (2019). According to their findings, a rise in competition among banks could lead to a decrease in their financial stability, which supports the traditional "competition-fragility" hypothesis. These outcomes are in marked contrast to estimates due to cross-country differences between one economy and another, different competition indicators, or heterogeneity of the samples that were considered.

Ozili (2018), has investigated the determinants of banking stability for a sample of consists of 48 African countries over the time period from 1996 to 2015. To capture the correlation between efficiency and financial stability, the author used the costs to net income ratio as a proxy for the banking efficiency variable, The Z-Score index was used by the author to measure the bank's stability. The empirical analysis findings indicated that banking efficiency is a significant determinant of financial stability in African countries' banks.

Phan et.al.(2019) examined the correlations between efficiency, competition, and banking stability in Malaysia, China, Vietnam, and Hong Kong during the period of 2004–2014. The Z-score index was employed by the authors to measure the stability of the bank, while the SFA and DEA approaches were used to calculate cost efficiency scores to measure the correlation between cost efficiency and financial stability. The findings of their empirical analysis support the traditional view of competition-fragility, indicating that a rise in competition among banks could have a positive influence on their stability. Cost efficiency is also indicated by empirical analysis as measured by the DEA approach, had a positive influence on the stability. By contrast, The SFA approach demonstrated that financial stability was negatively impacted by bank efficiency, but not significantly.

Neaime & Gaysset (2018) investigated the link between financial inclusion, banking stability, income inequality, and poverty in eight nations from the MENA region during the period of 2002 - 2015.Their conclusion was that financial inclusion helped reduce income inequality. The correlation between financial inclusion measure and poverty was not significant in statistical and economic terms. As per the study, financial inclusion measures and bank financial stability have a significant positive correlation.

Alvi et.al. (2020), used data from 88 banks across South Asian region (Pakistan, Bangladesh, Sri Lanka, and India) between 2012 and 2018, to examine the influence of financial inclusion measures on the financial stability of banks. Their results indicated that the expansion of financial inclusion enhances the financial stability of banks in the South Asian region.

Feghali et.al. (2021) investigated how the financial inclusion index affects the financial stability of banks, with a focus on the banking system, since 2011, an international sample has been used that encompasses more than 140 countries. Their findings indicate that only credit inclusion can cause adverse impacts on soundness of banks.

In accordance with their conclusion, the impact of financial inclusion measure on the financial stability of banks cannot be accurately determined by using a comprehensive measure of fiscal inclusion index. The researchers found that measure of financial inclusion, based on access to savings and payment accounts, can have either positive or neutral impacts on stability, while the expansion of credit is a factor that weakens stability.

Jungo et.al. (2022), assessed how banks' stability was affected by inclusion and competitiveness in two dissimilar samples, with 31 nations in the (LAC) region and 41 nations in the (SSA) region, from 2005 until 2018. According to the findings, inclusion improves banks' financial stability in LAC and SSA nations, while financial regulation only enhances banks' financial stability in Latin American countries. The findings also suggest that financial stability of banks is negatively impacted by competitiveness, while financial regulation reduces the negative impact of competitiveness on banks' financial stability in LAC and SSA nations.

Nyangu et.al. (2022), Analyzed the associations between financial stability, concentration, and competition among the banking systems of five emerging nations: Burundi, Tanzania, Kenya, Uganda, and Rwanda. The sample includes 149 commercial banks were employed from 2001 to 2018. The Z-Score index was utilized by the authors to evaluate the banks' financial stability. The authors employed the stock market's development variable, which is determined by the ratio of traded shares' bank value to market capitalization, to comprehend the relationship between the financial development and stability of banks. The outcomes suggest that trading shares to market capitalization as a measure of stock market development has a statistically insignificant positive influence on the fiscal stability of banks.

Zeqiraj et al., (2021), Examined the impact of banking performance on the financial stability of several commercial banks in Southeastern European nations from 2000 to 2015. Using "return on assets & return on equity ratios" as indicators of banking performance, the Z-Score index was utilized by the authors to evaluate the banks' financial stability. The empirical evidence shows that "ROA & ROE", as measures of banking performance, have a positive and significant effect on banks' financial stability. It can be noted that most researchers focused on competition and concentration levels and examined their effect on banks' financial stability. While the financial indicators and other financial tools have received little attention so far. There is a dearth of empirical research on the influence of banking efficiency, national financial inclusion, financial development and bank performance on financial stability of banks. Therefore, the current study is attempting to coverage the gap in literature regarding empirical evidence, complementing the studies mentioned above.

3. Methodology

The current study is designed to discover the determinants affecting commercial banks' financial stability by using (z-score) as a dependent variable, by examining banking competition, banking efficiency, national financial inclusion, and control factor as independent variables in the context of MENA Countries, the data for national financial inclusion variables have been collected from the international monetary fund (IMF) Data Source, and for bank-specific variables from (Orbis) databases.

3.1. The Study Sample

The current study's empirical evidence is derived from a balanced panel data set that samples 132 banks that operate in 14 countries from the {MENA} region between 2011 and 2020. There are 132 banks in existence, 11 of them are located in Saudi Arabia, 10 in Kuwait, 6 in Oman, 8 in Qatar, 20 in Arab Emirates, 15 in Jordan, 11 in the State of Egypt, 5 in the State of Sudan, 6 in the State of Lebanon, 8 in the State of Turkey, 9 in the Islamic Republic of Iran, 7 in the Republic of Tunisia, 5 in the Kingdom of Morocco, 11 in the Republic of Algeria.

The reason for selecting these banks was their presence on the stock markets in their respective countries. To achieve the objectives of this study, we included a total of 1320 banks annual observations. We excluded banks with unpredictable statistics sequences.

3.2. Definitions and Measurements of Variables

Based on the literature review, we designated the sum of indicators that were projected to have important influence on financial stability of commercial banks. The variables under study are summarized in Table 1, including info about the notation, the variables and the proxy of measurement.

3.2.1. Dependent Variable

The explained variable used to measure banking stability is Z-Score. Here, The Z-score index, which is derived from the return on average assets (ROAA), was utilized as a gauge of fiscal stability of commercial banks; this indicator has been utilized in several previous studies, particularly in the banking industry literature (e.g. Ghenimi et.al., 2017; Kiemo et .al., 2019; Koskei, 2020). The Z-score index's higher value indicates a higher level of banking stability, or in other words, a lower risk of insolvency risks. The following formula can be used to calculate the Z-score index:

$$\mathbf{Z-Score}_{i,t} = \frac{\mu_{i,t} + \mathbf{EA}_{i,t}}{\sigma\mu_{i,t}}$$

Where:

$\mu_{i,t} = ROAA_{i,t}$

$EA_{i,t}$ = equity capital$_{i,t}$ / total assets$_{i,t}$.

$\sigma\mu_{i,t}$ = The standard deviation of $ROAA_{i,t}$

3.2.2. Explanatory Variables

This current study used the measures of banking competition, banking efficiency, and national financial inclusion, which are the following explanatory variables.

- **Banking Competition:** The study measures bank competition by Herfindahl Hirschman Index (HHI). In empirical literature, this is the most widely used index of market concentration, as each bank in the banking system is estimated based on the squares of their market shares of deposits, assets, or loans. HHI is a static measure, and thus measures market concentration at a single point in time, and is calculated as follows:

$$\mathrm{HHI} = \sum_{i=1}^{n} (MSi)^2$$

Where:

MS_n : The share of the n^{th} bank.

In the present study, the competition index is calculated based on market share, which is calculated based on the gross loans market of commercial banks using the Herfindahl Hirschman Index (HHI). Accordingly, banking competition (HHI) is predicted to positively impact banks' financial stability.

Table N° 1: **Variables Definition**

Notation	Variable	Measure
Dependent Variable		
Banking Stability: Z-Score index		$\frac{ROAA_{i,t} + (\text{equity}/\text{total assets}_{i,t})}{\sigma ROAA_{i,t}}$
Independent Variables		
HHI	**Banking Competition**	The total squared value of the gross loans market share
BCC	**Banking Efficiency**	Variable Returns to Scale (VRS)
NB	**National Financial Inclusion**	Number of Branches / 100,000 adults
SMC	**Financial Development**	The percentage of listed shares' value to GDP
Control Variable		
CAMELS Rating	**Capital Adequacy**	The proportion of shareholders' equity to bank's total assets
	Assets Quality	The proportion of impaired loans to bank's gross loans
	Management Efficiency	The percentage of operating expense to net revenues
	Earning Capacity	The ratio of net income after tax to average shareholders' equity
	Liquidity Management	The percentage of liquid assets to bank assets
	Sensitivity To Market Risk	The percentage of total securities to bank's total assets

- **Banking Efficiency:** The data envelopment analysis (DEA) method is used to measure banking efficiency, and it is recognized as a non-parametric method for obtaining reliable measures of banks' efficiency, as In this study the mediation approach is utilized to specify inputs and outputs, assuming that commercial banks are fiscal intermediaries who take deposits of customers and create assets by lending and advance to borrowers.

Accordingly, the relative and technical efficiency of a group of homogeneous components called the Decision-making unit (DMU) was measured, which was obtained as a maximum proportion of weighted outputs to weighted inputs, represented in three inputs (The sum of customers' deposits, Bank's total fixed Assets, Staff Expenses) and three outputs (Bank's total Loans, Earning Assets, Net fee & Commission Income) are earned based on a previous study by Alhassan, and Brobbey (2016).

$$Max\ Ef\ = \frac{\sum_{r=1}^{s} u_r\, y_{r0}}{\sum_{i=1}^{m} v_i\, x_{i0}}$$

$$0 \leqslant= \frac{\sum_{r=1}^{s} u_r\, y_{rj}}{\sum_{i=1}^{m} v_i\, x_{ij}} \leqslant 1\,, \qquad j = 1,2,3 \ldots n$$

$$u_r\,;\ v_i\ \geqslant 0 :\ i = 1,2 \ldots s\ ; r = 1,2, \ldots m$$

Where

EF: The efficiency of each of the banks under study ; μ_r: Weight given to output ; y_{rj} : The value of output (j); v_i: Weight given to input; x_{ij} : The value of input (i); s: The volume of outputs; m: The volume of inputs.

In the present study, the purely technical comparative efficiency (BCC) of the banks under study was measured by using the model developed in the Banker, Charnes, and Cooper (1984) study. Efficiency scores are calculated using a model that accommodates variable standard returns, known as the "Variable Returns to Scale" (VRS) model. This model assumes that increasing a certain percentage of inputs results in a variable rate of increase or decrease in output. Consequently, we expected there will be a significant link between commercial banks' efficiency and its financial stability.

- **National Financial Inclusion:** In this empirical evidence, the ratio of commercial bank branches to "100,000" adult's individual is used to measure national financial inclusion; This ratio reflects the ability of banks to offer formal access to important financial services that it provides, especially in disadvantaged areas. It is important as it indicates the amount of services that directed by banks to disadvantaged areas and population groups that they are typically marginalized regarding access to fiscal services. There are no preconceived notions about the influence of the national fiscal inclusion index on banking stability.
- **Financial Development:** Value of listed shares to GDP ratio is employed as a measure of stock market capitalization and its development, this indicator is a demonstrates how it's depend firms on external finance, facilitates firms' access to external finance, this indicates the trend of companies towards financing by shares, in the event that companies resort to financing by shares, this will lead to a negative impact on the profits of banks (Gul, Irshad, & Zaman, 2011), as the development of financial markets leads to a weakening of financing requests from banks, which leads to It leads to the establishment of a competitive relationship between them, at the same time, there is a sure complementary association between the stock markets and the banking sector due to their mutual promotion role in the development process (Pan & Pan, 2014).

If stock markets are not well-developed, banks can use their borrowing power to enhance clients' financial situation by increasing credit supply. On the contrary, Stock exchanges that are effective and developed can compete with banks in providing financial assistance to investors and borrowers.Subsequently, the banking sector can expand their banking industry to offer consulting, financial, and commercial services, and enhance non-interest income. That is, the higher the percentage of stock market capitalization indicators, the worse it will be for banks, due to the decrease in credit granted to borrowers from the banking sector to companies, and the interest income that banks receive from providing credit for projects will decrease, which reduces their performance and profitability. Consequently, the financial performance of commercial banks is expected to be negatively correlated with the level of development of financial markets.

Hence, it can be said that with the increase in the value of the stock market capitalization indicator, the stability of commercial banks also decreases.

- **Control Variables:** The present paper also incorporates CAMELS framework indicators as a proxy for commercial Banks' performance, which is a control variable that could also have an impact on banking stability, our proxy for Commercial Banks'performance is estimated through of statistical approach that includes the use of the principal component analysis (PCA) approach. An index combining six main components of a bank system based on "CAMELS" framework (Capital adequacy of the bank, Assets quality of the bank, Management efficiency of the bank, Earnings of the bank, Liquidity management of the bank, and Sensitivity to market risk), all CAMELS variables have been reduced to have been reduced to a single factor through the principal component analysis (PCA) as a proxy for commercial banks' performance. Consequently, we expected there will be a significant link between commercial banks' performance and its financial stability.

3.3. Method and Model Specification

This study used a model to empirically investigate the influence of banking competition, inclusion, efficiency, and performance on commercial banks' fiscal stability. Considering the characteristics of the data being studied, "the generalized method of moments (GMM) technique" was used, specifically, the "Two Step Difference GMM method" promoted by Windmeijer (2005),is utilized in this study In order to prevent econometric problems in regression estimation, such as including autocorrelation in residuals and heteroskedasticity. Consequently, we use the GMM estimator based on the diagnostic results of the aforementioned econometric problems. Estimating multiple linear regression models is done as follows:

$$Z-\text{score}_{i,t} = \beta_0 + \delta\, Z-\text{score}_{it-1} + \beta_1 \text{HHI}_{i,t} + \beta_2 \text{BCCI}_{i,t} + \beta_3 \text{NB}_{i,t} + \beta_4 \text{SMC}_{i,t} + \beta_5 \text{CAMELS}_{i,t} + \varepsilon_{it} \dots\dots (1)$$

Where:

$Z-\text{score}_{it}$ = The stability of the bank i(from1 to 132) at year t(from1 to 10).

β_0 = The constant parameter.

δ = The speed of adapting to equilibrium.

$Z-score_{it-1}$ = The one-period lagged banking stability.

$\beta_1 - \beta_5$ = are model coefficient parameters.

ε_{it} = residual term.

4. Findings and Discussions

The empirical findings are separated into descriptive statistics of variables, correlation matrix, and experiential econometric examination.

4.1. Descriptive Statistics

Both the dependent and explanatory variables are represented by condensed descriptive statistics in Table 2. By examining the panel dataset of 132 banks that operate in the banking industry in the {MENA} region, from 2011 to 2020, consisting of 1320 observations. The key elements of it are the mean, maximum, and minimum values, as well as standard deviation values. The maximum and minimum values indicate that the data is not normal and there are outliers in the variables under study. Also, the maximum SMC refers to the presence of outliers, and increased dispersion therefore suggests the presence of heterogeneity among the banks under study.

Table N° 1: The summary of the descriptive statistics

Var.	Obser.	Mean	Std.Dev.	Min.	Max.
Z-Score	1320	3.53	.979	-.353	5.892
HHI	1320	7.718	.484	7.058	9.208
BCCI	1320	.91	.107	.311	1
NB	1320	2.407	.602	1.073	3.475
SMC	1320	45.33	28.62	.079	114.53
CAMELS	1320	.011	1.005	-7.558	15.752

4.2. Correlation Analysis

The summary of the correlation analysis for the study variables using pairwise correlation is presented in the following Table 3.

Table N° 2: The correlation analysis matrix

Variables	Z-Score	HHI	BCCI	NB	SMC	CAMELS
Z-Score	1.000					
HHI	0.046	1.000				
BCCI	0.262	0.141	1.000			
NB	-0.077	0.437	0.028	1.000		
SMC	0.228	0.017	0.124	0.282	1.000	
CAMELS	0.350	-0.135	0.115	-0.193	-0.017	1.000

In general, the correlation between study variables suggests that the variables have small coefficients, so all the relationships between the explanatory variables are lower than (0.80), indicating that the explanatory variables in our estimation model have no problem with multi-collinearity.

4.3. Analysis and interpretation Empirical Results:

Table 4 summarizes the panel regression analysis results, utilising {Z-score} as a proxy for fiscal stability of commercial banks and its determinants, i.e. banking competition, banking efficiency, national financial inclusion, financial development, and control variable. The results indicate that the lagged explained (dependent) variable, which gauges the persistence of the financial stability ration {Z-score}, is significant and positive at a 1% level, indicating the model specification's dynamic nature.

According to the Wald-test, our model is well-fitted, and the Sargan-test test does not show any evidence of over-identifying restrictions. Also, AR (1) indicates that a negative first-order serial autocorrelation is present, but AR (2) rejects it later. Regarding the estimate results and the statistical significance of the influence of explanatory variables on explained variable (financial stability), The estimate outcomes indicate that banking competition has a significant and positive influence on banks' financial stability, and has the statistical significance with a confidence level of 1%, indicating thereby that a higher level of competition results in better bank stability of commercial banks. The implication is that a 1% increase in competition in banking will enhance the financial stability of banks by approximately 90%, ceteris paribus. This outcome of positivity is in line with expectations and several previous studies (Ahi & Laidroo, 2019; Antony et. al, 2021; Mamadou Asngar et .al. 2022; Noman et .al. 2018). Therefore, this finding supports the "competition-Stability" hypothesis, which suggests that competition among commercial banks has a positive influence on their financial stability.

The technical efficiency rates play a positive role in commercial banks' fiscal stability, and have statistical significance at a significant level of 99% confidence. The implication is that one percentage point; increase in the level of banking efficiency will enhance the banks' financial stability by approximately 44%, ceteris paribus. This positive empirical finding is consistent with the expected results and also similar to prior empirical study by Phan et. al. (2019). Based on these results, banks that have higher efficiency rates are more likely to have higher financial stability. Banking efficiency is therefore a significant factor in the fiscal stability of commercial banks.

The national financial inclusion ratio has a positive and statistically significant influence on the financial stability of commercial banks at a 99% confidence level, which means that every 1% increase in the ratio of commercial bank branches to "100,000" adults will affect a positive increase in banks' stability by 28%, ceteris paribus. Previous empirical studies' findings are consistent with this outcome. This implies that increase levels of financial inclusion results in better bank stability of commercial banks.

The stock market (SMC)'s capitalization has a statistically significant negative impact at a 99% confidence level, which means that every 1% increase in stock market capitalization (SMC) drops down the bank stability of commercial banks by a decline of 0.13%, ceteris paribus, As a result, it is demonstrated that a advanced level of stock market capitalization can be leads to bank instability. The negative correlation between stock market development and bank stability of commercial banks suggests that companies may resort to financing through shares. Effective and developed markets can compete with the banking sector in providing financial resources for investors and borrowers; this will lead to a negative impact on traditional loan activities, which leads to a decline the profits of banks. Despite being consistent with our expectations, this negative finding does not align with the previous empirical study conducted by Nyangu et. al. (2022).

Table N° 3: Regression results for the Z-Score index

Z-Score index	Coefficient	Std. Err.	t-value	p-value
Z-Score (Lag t= −1)	0.4735693***	0.0207357	22.840	0.0000
HHI	0.9010591***	0.1145345	7.870	0.0000
BCCI	0.4438002***	0.1495686	2.970	0.0030
NB	0.2804528***	0.0579900	4.840	0.0000
SMC	-.0013044***	0.0005020	-2.60	0.0090
CAMELS	0.1852754***	0.0126453	14.650	0.0000
Constant	-5.512272***	0.9637062	-5.72	0.0000
Wald-test		***χ2 (6) = 1320.39***		
p-value		**0.000**		
Sargan test		0.1536		
AR (1)		0.0000		
AR (2		0.3692		
N. instruments		42		
N. groups		127		
Observations		1,016		

The 10%*, 5%, and 1% *** levels each have statistical significance..**

Finally, concerning the estimated results of the control variable obtained from the CAMELS composite rating as a proxy for commercial Banks' performance their influence on their financial stability, Evidence indicates that commercial banks' performance has a significant positive and statistical influence on their financial stability, which is measured by the Z-score. The implication is that if internal performance increases by 1%, banks' financial stability also increases by around 20%, ceteris paribus. This implies that, with higher commercial bank performance, the bank increases its financial stability. Our expectations are aligned with this positive finding and it also aligns with the previous study by Zeqiraj et al. (2021).

5. Conclusions:

The purpose of this current investigation was to discover the factors or features that contribute to the financial stability of commercial banks; we consider a balanced panel data set from 14 MENA region countriesconcentrating on a sampling of 132 commercial banks from 2011 to 2020. We have used linear multiple regression models analysis using a "generalized method of moments (GMM) estimator" to a panel data set. The Z-score indicator was utilized in this current study to measure the fiscal stability associated with commercial banks. According to the estimated results in this current study, the fiscal stability of the banking system is explained by financial indicators such as competition, banking efficiency, national financial inclusion, and financial development, as well as the controlling variable. The empirical evidence outcomes from current investigation reveal all explanatory determinants that are significant for ensure the bank's stability and safety. According to regression findings, banking competition, efficiency, and financial inclusion have a significant positive and statistical influence on the fiscal stability of commercial banks, while the results indicate that

financial development measured by stock market capitalization has a negative and statistically significant influence on the fiscal stability of the banking sector. The findings indicate that the control variable measured by CAMELS framework indicators has a significant optimistic and statistically effect on the financial stability of commercial banks.

Based on the findings, this current investigation recommends increasing attention to financial reforms, liberalizing banking services by considering facilitating the entry of new commercial banks banks into the local market and encouraging mergers to take advantage of competition, given its importance in strengthening of the banking sector.

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